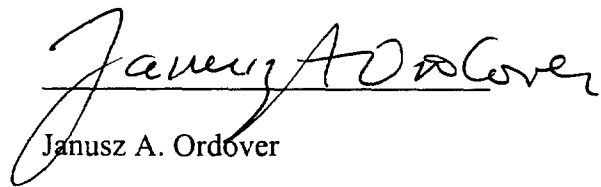


would almost certainly make consumers worse off, and could ultimately paralyze some of the most dynamic technologies the world has ever seen.

**VERIFICATION**

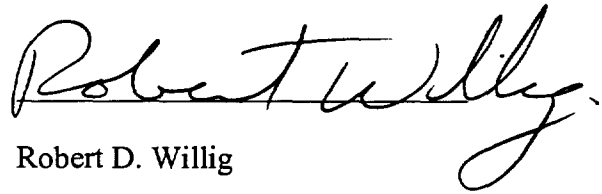
I, Janusz A. Ordover, declare under penalty of perjury that the foregoing is true and correct. Executed on September 14, 1999.

  
Janusz A. Ordover

**VERIFICATION**

I, Robert D. Willig, declare under penalty of perjury that the foregoing is true and correct.

Executed on September 14, 1999.

A handwritten signature in cursive script, reading "Robert D. Willig". The signature is written in black ink and is positioned above the printed name.

Robert D. Willig

October 1998

## **JANUSZ ALEKSANDER ORDOVER**

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### **EDUCATION**

- 1968-1973      Columbia University, New York, New York  
Graduate Department of Economics and European Institute of the School of International Affairs  
Doctoral Dissertation: Three Essays on Economic Theory, May 1973
- 1967-1968      McGill University, Montreal, Canada  
Departments of Economics and Political Science
- 1963-1966      Warsaw University, Warsaw, Poland  
Department of Political Economy

### **HONORS**

- 1973              Columbia University: Highest distinction for the doctoral dissertation
- 1971-1972      Columbia University: Honorary President's Fellow
- 1969-1971      Columbia University: President's Fellow
- 1967-1968      McGill University: Honors Student
- 1964, 1965      Warsaw University: Award for Academic Achievement, Department of Political Economy
- Who's Who in the World  
Who's Who in America  
Who's Who in the East

### **PROFESSIONAL EXPERIENCE**

- June 1982 -      Professor of Economics  
present          Department of Economics, New York University, New York, New York
- Sept. 1996 -      Director of Masters in Economics Program  
present          Department of Economics, New York University
- Summer 1996-      Lecturer  
present          International Program on Privatization and Reform  
Institute for International Development, Harvard University, Cambridge, Massachusetts

**Professional Experience (continued)**

Aug. 1991 - Deputy Assistant Attorney General for Economics  
Oct. 1992 Antitrust Division  
United States Department of Justice, Washington, D.C.

Sept. 1989 - Visiting Professor of Economics  
July 1990 School of Management and Organization, Yale University, New Haven, Connecticut

Lecturer in Law  
Yale Law School

Mar. 1984 - Visiting Professor of Economics  
June 1988 Università Commerciale "Luigi Bocconi", Milan, Italy.

June 1982 - Director of Graduate Studies  
Feb. 1985 Department of Economics, New York University

Sept. 1982 - Adjunct Professor of Law (part-time)  
June 1986 Columbia University Law School, New York, New York

Feb. 1982 - Acting Director of Graduate Studies  
June 1982 Department of Economics, New York University

June 1978 - Associate Professor of Economics  
June 1982 Department of Economics, New York University

Sept. 1979 - Lecturer in Economics and Antitrust  
May 1990 New York University Law School

Sept. 1977 - Member, Technical Staff  
June 1978 Bell Laboratories, Holmdel, New Jersey

Associate Professor of Economics  
Columbia University

Visiting Research Scholar  
Center for Law and Economics, University of Miami, Miami, Florida

Sept. 1973 - Assistant Professor of Economics  
Aug. 1977 New York University

Summer 1976 Fellow  
Legal Institute for Economists, Center for Law and Economics, University of Miami

Summer 1976 Visiting Researcher  
Bell Laboratories, Holmdel, New Jersey

**OTHER PROFESSIONAL ACTIVITIES**

1997 - present	Consultant Inter-American Development Bank, Washington, D.C.
1997 - present	Board of Editors Antitrust Report
1995 - present	Consultant The World Bank, Washington, D.C.
1995 - present	Senior Affiliate Cornerstone Research, Inc., Palo Alto, California
Fall 1995	Testimony, Hearings of the Federal Trade Commission "Anticipating the 21st Century: Competition Policy in the New High-Tech, Global Marketplace," Washington, D.C.
1994 - 1996	Senior Affiliate Law and Economics Consulting Group, Emoryville, California
1994 - present	Senior Affiliate Consultants in Industry Economics, LLC, Princeton, New Jersey
1993 - 1994	Director Consultants in Industry Economics, Inc., Princeton, New Jersey
1992 - 1993	Vice-Chair ( <i>pro tempore</i> ) Economics Committee, American Bar Association, Chicago, Illinois
1992 - 1995 1990 - 1991	Senior Consultant Organization for Economic Cooperation and Development, Paris, France
1991	Member <i>Ad hoc</i> Working Group on Bulgaria's Draft Antitrust Law The Central and East European Law Initiative American Bar Association
1990 - 1991	Advisor Polish Ministry of Finance and Anti-Monopoly Office Warsaw, Poland
1990 - 1991	Member Special Committee on Antitrust Section of Antitrust Law, American Bar Association
1990 - 1991	Director and Senior Advisor Putnam, Hayes & Bartlett, Inc., Washington, D.C.

**Other Professional Activities (continued)**

- 1990 - 1996    Member
  - Predatory Pricing Monograph Task Force
  - Section of Antitrust Law, American Bar Association
  
- April 12,      Witness  
1989            Hearings on Competitive Issues in the Cable TV Industry
  - Subcommittee on Monopolies and Business Rights of the Senate Judiciary Committee
  - Washington, D.C.
  
- 1989            Member
  - EEC Merger Control Task Force, American Bar Association
  
- 1988 -           Associate Member  
present          American Bar Association
  
- 1987 - 1989   Adjunct Member
  - Antitrust and Trade Regulation Committee, The Association of the Bar of the City of New York
  
- 1984            Speaker, "Industrial and Intellectual Property: The Antitrust Interface"
  - National Institutes, American Bar Association, Philadelphia, Pennsylvania
  
- 1983 - 1990   Director
  - Consultants in Industry Economics, Inc.
  
- 1982            Member
  - Organizing Committee
  - Tenth Annual Telecommunications Policy Research Conference, Annapolis, Maryland
  
- 1981            Member
  - Section 7 Clayton Act Committee, Project on Revising Merger Guidelines
  - American Bar Association
  
- 1980            Organizer
  - Invited Session on Law and Economics
  - American Economic Association Meetings, Denver, Colorado
  
- 1978 - 1979   Member
  - Department of Commerce Technical Advisory Board
  - Scientific and Technical Information Economics and Pricing Subgroup
  
- 1978 - present   Referee for numerous scholarly journals, publishers, and the National Science Foundation

**MEMBERSHIPS IN PROFESSIONAL SOCIETIES**

American Economic Association  
American Bar Association

## PUBLICATIONS

### A. Journal Articles

"Parity Pricing and its Critics: Necessary Condition for Efficiency in Provision of Bottleneck Services to Competitors," with W. J. Baumol and R.D. Willig, *Yale Journal on Regulation*, vol. 14, Winter 1997, 146-63.

"Competition and Trade Law and the Case for a Modest Linkage," with E. Fox, *World Competition, Law and Economics Review*, vol. 19, December 1995, 5-34.

"On the Perils of Vertical Control by a Partial Owner of Downstream Enterprise," with W.J. Baumol, *Revue D'économie industrielle*, No. 69, 3<sup>e</sup> trimestre 1994, 7-20.

"Competition Policy for Natural Monopolies in Developing Market Economy," with R.W. Pittman and P. Clyde, *Economics of Transition*, vol. 2, no. 3, September 1994, 317-343. Reprinted in B. Clay (ed), *De-monopolization and Competition Policy in Post-Communist Economies*, Westview Press 1996, 159-193.

"The 1992 Agency Horizontal Merger Guidelines and the Department of Justice's Approach to Bank Merger Analysis," with M. Guerin-Calvert, *Antitrust Bulletin*, vol. 37, no. 3, 667-688. Reprinted in *Proceedings of the 1992 Conference on Bank Structure and Competition: Credit Markets in Transition*, Federal Reserve Bank of Chicago, 1992, 541-560.

"Entry Analysis Under the 1992 Horizontal Merger Guidelines," with Jonathan B. Baker, *Antitrust Law Journal*, vol. 61, no. 1, Summer 1992, 139-146.

"Economics and the 1992 Merger Guidelines: A Brief Survey," with Robert D. Willig, *Review of Industrial Organization*, vol. 8, 139-150, 1993. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1992, 639-652.

"Equilibrium Vertical Foreclosure: A Reply," with G. Saloner and S.A. Salop, *American Economic Review*, vol. 82, no. 3, 1992, 698-703.

"A Patent System for Both Diffusion and Exclusion," *Journal of Economic Perspectives*, vol. 5, Winter 1991, 43-60.

"R&D Cooperation and Competition," with M. Katz, *Brookings Papers on Economic Activity: Microeconomics*, 1990, 137-203.

"Equilibrium Vertical Foreclosure," with G. Saloner and S. Salop, *American Economic Review*, vol. 80, March 1990, 127-142.

"Antitrust Policy for High-Technology Industries," with W.J. Baumol, *Oxford Review of Economic Policy*, vol. 4, Winter 1988, 13-34. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1991, 949-984.

"Conflicts of Jurisdiction: Antitrust and Industrial Policy," *Law and Contemporary Problems*, vol. 50, Summer 1987, 165-178.

"Market Structure and Optimal Management Organization," with C. Bull, *Rand Journal of Economics*, vol. 18, no. 4, Winter 1987, 480-491.



**A. Journal Articles (continued)**

"A Sequential Concession Game with Asymmetric Information," with A. Rubinstein, *Quarterly Journal of Economics*, vol. 101, no.4, November 1986, 879-888.

"The G.M.-Toyota Joint Venture: An Economic Assessment," with C. Shapiro, *Wayne Law Journal*, vol. 31, no. 4, 1985, 1167-1194.

"Economic Foundations and Considerations in Protecting Industrial and Intellectual Property: An Introduction," *ABA Antitrust Law Journal*, vol. 53, no. 3, 1985. 503-518, Comments, 523-532.

"Antitrust for High-Technology Industries: Assessing Research Joint Ventures and Mergers," with R.D. Willig, *Journal of Law and Economics*, vol. 28, May 1985, 311-334.

"Use of Antitrust to Subvert Competition," with W.J. Baumol, *Journal of Law and Economics*, vol. 28, May 1985, 247-266. Reprinted in *Journal of Reprints for Antitrust Law and Economics*, vol. 16, no. 2.

"Advances in Supervision Technology and Economic Welfare: A General Equilibrium Analysis," with C. Shapiro, *Journal of Public Economics*, vol. 25/3, 1985, 371-390.

"Predatory Systems Rivalry: A Reply," with A.O. Sykes and R.D. Willig, 83 *Columbia Law Review*, June 1983, 1150-1166. Reprinted in *Corporate Counsel*, Matthew Bender & Company, 1984, 433-450.

"The 1982 Department of Justice Merger Guidelines: An Economic Assessment," with R.D. Willig, 71 *California Law Review*, March 1983, 535-574. Reprinted in *Antitrust Policy in Transition: The Convergence of Law and Economics*, E. Fox and J. Halverson (eds.), American Bar Association Press, 1984, 267-304.

"Unfair International Trade Practices," with A. Sykes and R.D. Willig, 15 *Journal of International Law and Politics*, Winter 1983, 323-338.

"On Non-linear Pricing of Inputs," with J. Panzar, *International Economic Review*, October 1982, 659-675.

"Herfindahl Concentration, Rivalry and Mergers," with A. Sykes and R.D. Willig, *Harvard Law Review*, vol. 95, June 1982, 1857-1875.

"A Reply to 'Journals as Shared Goods: Comment,'" with R.D. Willig, *American Economic Review*, June 1982, 603-607.

"Proposed Revisions to the Justice Department's Merger Guidelines," with S. Edwards, *et al.*, *Columbia Law Review*, vol. 81, December 1981, 1543-1591.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, *Yale Law Journal*, vol. 91, November 1981, 8-53.

"On the Consequences of Costly Litigation in the Model of Single Activity Accidents: Some New Results," *Journal of Legal Studies*, June 1981, 269-291.

"On the Political Sustainability of Taxes," with A. Schotter, *American Economic Review Papers and Proceedings*, May 1981, 278-282.

**A. Journal Articles (continued)**

"Information and the Law: Evaluating Legal Restrictions on Competitive Contracts," with A. Weiss, *American Economic Review Papers and Proceedings*, May 1981, 399-404.

"Redistributing Incomes: *Ex Ante* or *Ex Post*," *Economic Inquiry*, April 1981, 333-349.

"On the Nonexistence of *Pareto Superior* Outlay Schedules," with J. Panzar, *The Bell Journal of Economics*, Spring 1980, 351-354.

"The Role of Information in the Design of Public Policy Towards Externalities," with R.D. Willig, *Journal of Public Economics*, December 1979, 271-299.

"On the Concept of Optimal Taxation in the Overlapping-Generations Model of Efficient Growth," with E.S. Phelps, *Journal of Public Economics*, August 1979, 1-27.

"Products Liability in Markets With Heterogeneous Consumers," *Journal of Legal Studies*, June 1979, 505-525.

"Costly Litigation and the Tort Law: Single Activity Accidents," *Journal of Legal Studies*, June 1978, 243-261.

"On the Optimal Provision of Journals Qua Excludable Public Goods," with R.D. Willig, *American Economic Review*, June 1978, 324-338.

"Distortionary Wage Differentials in a Two-Sector Growth Model: Some Theorems on Factor Earnings," *International Economic Review*, June 1978, 321-333.

"On the Optimality of Public-Goods Pricing with Exclusion Devices," with W.J. Baumol, *Kyklos*, Fasc. 1, 1977, 5-21.

"Public Good Properties in Reality: The Case of Scientific Journals," with W.J. Baumol, *Proceedings of the ASIS Meetings*, San Francisco, October 1976.

"Merger Illusions and Externalities: A Note," with A. Schotter, *Eastern Economic Review*, November 1976, 19-21.

"Distributive Justice and Optimal Taxation of Wages and Interest in a Growing Economy," *Journal of Public Economics*, January 1976, 139-160.

"Linear Taxation of Wealth and Wages for Intragenerational Lifetime Justice: Some Steady-State Cases," with E.S. Phelps, *American Economic Review*, September 1975, 660-673.

**B. Books and Monographs**

*Proceedings of the Tenth Annual Telecommunications Policy Research Conference*, editor with O. Gandy and P. Espinosa, ABLEX Publishers, 1983.

*Obstacles to Trade and Competition*, with L. Goldberg, OECD, Paris, 1993.

*Predatory Pricing*, with William Green, *et al.*, American Bar Association, Section of Antitrust Law, Monograph 22, 1996.

*Welfare Economics: Readings*, editor with W.J. Baumol, Edward Elgar Publishing Ltd. (forthcoming).

### C. Book Chapters

"Sustainable Privatization of Latin American Infrastructure: The Role of Law and Regulatory Institutions," with Evamaria Uribe, Chap. in R. D. Willig (ed) (forthcoming, 1999).

"Access and Bundling in High-Technology Markets," with R. D. Willig in (forthcoming, 1999).

"The Harmonization of Competition and Trade Law," with E. Fox, Chap. 15 in L. Waverman, *et al.* (eds.), *Competition Policy in the Global Economy*, Routledge, 1997, 407-439.

"Transition to a Market Economy: Some Industrial Organization Issues," with M. Iwanek, Chap. 7 in H. Kierzkowski, *et al.* (eds.), *Stabilization and Structural Adjustment in Poland*, Routledge, 1993, 133-170.

"Competition Policies for Natural Monopolies in a Developing Market Economy," with Russell Pittman, *Butterworth's Trade and Finance in Central and Eastern Europe*, Butterworth Law Publishers Ltd., 1993, 78-88, Reprinted in *Journal for Shareholders* (published by the Russian Union of Shareholder), Moscow, January 1993, 33-36; *Versenyfelugyeleti Ertesito* (Bulletin of Competition Supervision), Budapest, vol. 3, no. 1-2, January 1993, 30-41; *Narodni Hospodarstvi* (National Economy), Prague; *ICE: Revista de Economia*, No. 736 (December 1994) (in Spanish), 69-90; *USA: Politics, Economics, Ideology*, forthcoming.

"Antitrust: Source of Dynamic and Static Inefficiencies?" with W.J. Baumol, in T. Jorde and D. Teece (eds.), *Antitrust, Innovation, and Competitiveness*, Oxford University Press, 1992, 82-97. Reprinted in "The Journal of Reprints for Antitrust Law and Economics," vol. 26, no. 1 (1996).

"Economic Foundations of Competition Policy: A Review of Recent Contributions," in W. Comanor, *et al.*, *Competition Policy in Europe and North America: Economic Issues and Institutions, Fundamentals of Pure and Applied Economics* (Vol. 43), Harwood Academic Publishers, 1990, 7-42.

"The Department of Justice 1988 Guidelines for International Operations: An Economic Assessment," with A.O. Sykes, in B. Hawk (ed.), *European/American Antitrust and Trade Laws*, Matthew Bender, 1989, 4.1-4.18.

"Predation, Monopolization, and Antitrust," with G. Saloner, in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, vol. 1, North Holland, 1989, 538-596.

"Supervision Technology, Firm Structure, and Employees' Welfare," in *Prices, Competition and Equilibrium*, M. Peston and R.E. Quandt (eds.), Philip Allan Publishers, Ltd., 1986, 142-163.

"Perspectives on Mergers and World Competition," with R.D. Willig, in *Antitrust and Regulation*, R. Grieson (ed.), Lexington Books, 1986, 201-218.

"Transnational Antitrust and Economics," in *Antitrust and Trade Policies in International Trade*, B. Hawk (ed.), Matthew Bender, 1985, 233-248.

"Pricing of Interexchange Access: Some Thoughts on the Third Report and Order in FCC Docket No. 78-72," in *Proceedings of the Eleventh Annual Telecommunications Policy Research Conference*, Vincent Mosco (ed.), ABLEX Publishers, 1984, 145-161.

"Non-Price Anticompetitive Behavior by Dominant Firms Toward the Producers of Complementary Products," with A.O. Sykes and R.D. Willig, in *Antitrust and Regulation: Essays in Memory of John McGowan*, F. Fisher (ed.), MIT Press, 1985, 315-330.

"Local Telephone Pricing in a Competitive Environment," with R.D. Willig, in *Regulating New Telecommunication Networks*, E. Noam (ed.), Harcourt Brace Jovanovich, 1983, 267-289.

"An Economic Definition of Predatory Product Innovation," with R.D. Willig, in *Strategy, Predation and Antitrust Analysis*, S. Salop (ed.), Federal Trade Commission, 1981, 301-396.

"Marginal Cost," in *Encyclopedia of Economics*, D. Greenwald (ed.), McGraw-Hill, 2nd ed. 1994, 627-630.

"Understanding Economic Justice: Some Recent Development in Pure and Applied Welfare Economics," in *Economic Perspectives*, M. Ballabon (ed.) Harwood Academic Publishers, vol. 1, 1979, 51-72.

"Problems of Political Equilibrium in the Soviet Proposals for a European Security Conference," in *Columbia Essays in International Affairs*, Andrew W. Cordier (ed.) Columbia University Press, New York, 1971, 1951-1974.

#### D. Other Publications

"Predatory Pricing," in Peter Newman (ed.), *The New Palgrave Dictionary of Economics and the Law*, MacMillan (forthcoming).

Book review of L. Philips, *Competition Policy: A Game Theoretic Perspective*, reviewed in *Journal of Economic Literature*, vol. 35, No.3, September 1997, 1408-9.

"The Role of Efficiencies in Merger Assessment: The 1997 Guidelines," *Antitrust Report*, September 1997, 10-17.

"Bingaman's Antitrust Era," *Regulation*, vol. 20, No. 2, Spring 1997, 21-26.

"Competition Policy for High-Technology Industries," *International Business Lawyer*, vol. 24, No. 10, November 1996, 479-82.

"Internationalizing Competition Law to Limit Parochial State and Private Action: Moving Towards the Vision of World Welfare," with E.M. Fox, *International Business Lawyer*, vol. 24, No. 10, November 1996, 458-62.

"Economists' View: The Department of Justice Draft for the Licensing and Acquisition of Intellectual Property," *Antitrust*, vol. 9, No. 2, Spring 1995, 29-36.

"Competition Policy During Transformation to a Centrally Planned Economy: A Comment," with R.W. Pittman, in B. Hawk (ed.), *1992 Fordham Corporate Law Institute*, 533-38.

"Poland: The First 1,000 Days and Beyond," *Economic Times*, vol. 3, no. 9, October 1992, 6-7.

"Interview: Janusz A. Ordover: A Merger of Standards? The 1992 Merger Guidelines," *Antitrust*, vol. 6, no. 3, Summer 1992, 12-16.

"Interview: U.S. Justice Department's New Chief Economist: Janusz A. Ordover," *International Merger Law*, no. 14, October 1991.

"Poland: Economy in Transition," *Business Economics*, vol. 26, no. 1, January 1991, 25-30.

"Economic Analysis of Section 337: Protectionism versus Protection of Intellectual Property," with R.D. Willig, in *Technology, Trade and World Competition*, JEIDA Conference Proceedings, Washington, D.C., 1990, 199-232.

"Eastern Europe Needs Antitrust Now," with E. Fox, *New York Law Journal*, November 23, 1990, 1-4.

"Understanding Econometric Methods of Market Definition," with D. Wall, *Antitrust*, vol. 3, no. 3, Summer 1989, 20-25.

"Proving Entry Barriers: A Practical Guide to Economics of Entry," with D. Wall, *Antitrust*, vol. 2, no. 2, Winter 1988, 12-17.

"Proving Predation After Monfort and Matsushita: What the New 'New Learning' has to Offer," with D. Wall, *Antitrust*, vol. 1, no. 3, Summer 1987, 5-11.

"The Costs of the Tort System," with A. Schotter, Economic Policy Paper No. PP-42, New York University, March 1986. Reprinted in *Congressional Record*, U.S. Government Printing Office, Washington, D.C., 1987.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, Report for the Federal Trade Commission, October 1982, 131 pp.

"Market Power and Market Definition," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, May 1981.

"Herfindahl Concentration Index," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, March 1981.

"Public Interest Pricing of Scientific and Technical Information," Report for the Department of Commerce Technical Advisory Board, September 1979.

"Economics of Property Rights as Applied to Computer Software and Databases," with Y.M. Braunstein, D.M. Fischer, W.J. Baumol, prepared for the National Commission on New Technological Uses of Copyrighted Works, June 1977, 140 pp. Reprinted in part in *Technology and Copyright*, R.H. Dreyfuss (ed.), Lemond Publications, 1978.

Book review of O. Morgenstern and G.L. Thompson, *Economic Theory of Expanding and Contracting Economies*, reviewed in *Southern Economic Journal*, September 1978.

"Manual of Pricing and Cost Determination for Organizations Engaged in Dissemination of Knowledge," with W.J. Baumol, Y.M. Braunstein, D.M. Fischer, prepared for the Division of Science Information, NSF April 1977, 150 pp.

#### UNPUBLISHED PAPERS

"Economics, Antitrust and the Motion Picture Industry," C.V. Starr Center Policy Paper, July 1983.

"On Bargaining, Settling, and Litigating: A Problem in Multiperiod Games With Imperfect Information," with A. Rubinstein, C.V. Starr Working Paper, December 1982.

"Supervision and Social Welfare: An Expository Example," C.V. Starr Center Working Paper, January 1982.

"Should We Take Rights Seriously: Economic Analysis of the Family Education Rights Act," with M. Manove, November 1977.

"An Echo or a Choice: Product Variety Under Monopolistic Competition," with A. Weiss; presented at the Bell Laboratories Conference on Market Structures, February 1977.

#### **GRANTS RECEIVED**

Regulation and Policy Analysis Program, National Science Foundation, Collaborative Research on Antitrust Policy, Principal Investigator, July 15, 1985 - December 31, 1986.

Regulation of Economic Activity Program, National Science Foundation, Microeconomic Analysis of Antitrust Policy, Principal Investigator, April 1, 1983 - March 31, 1984.

Economics Division of the National Science Foundation, "Political Economy of Taxation," Principal Investigator, Summer 1982.

Sloan Workshop in Applied Microeconomics (coordinator), with W.J. Baumol (Principal Coordinator), September 1977 - August 1982.

Economics Division of the National Science Foundation, "Collaborative Research on the Theory of Optimal Taxation and Tax Reform," July 1979 to September 1980, with E.S. Phelps.

Division of Science Information of the National Science Foundation for Research on "Scale Economies and Public Goods Properties of Information," W.J. Baumol, Y.M. Braunstein, M.I. Nadiri, Fall 1974 to Fall 1977.

National Science Foundation Institutional Grant to New York University for Research on Taxation and Distribution of Income, Summer 1974.

## **Curriculum Vitae**

**Name:** Robert D. Willig

**Address:** 220 Ridgeview Road, Princeton, New Jersey 08540

**Birth:** 1/16/47; Brooklyn, New York

**Marital Status:** Married, four children

**Education:** Ph.D. Economics, Stanford University, 1973  
Dissertation: Welfare Analysis of Policies  
Affecting Prices and Products.  
Advisor: James Rosse

M.S. Operations Research, Stanford University, 1968.

A.B. Mathematics, Harvard University, 1967.

### **Professional Positions:**

Professor of Economics and Public Affairs, Princeton University, 1978-.

Principal External Advisor, Infrastructure Program, Inter-American Development Bank, 6/97-8/98.

Deputy Assistant Attorney General, U.S. Department of Justice, 1989-1991.

Supervisor, Economics Research Department, Bell Laboratories, 1977-1978.

Visiting Lecturer (with rank of Associate Professor), Department of Economics and Woodrow Wilson School, Princeton University, 1977-78 (part time).

Economics Research Department, Bell Laboratories, 1973-77.

Lecturer, Economics Department, Stanford University, 1971-73.

**Other Professional Activities:**

Advisory Board, Electronic Journal of Industrial Organization and Regulation Abstracts, 1996-.

Visiting Faculty Member (occasional), International Program on Privatization and Regulatory Reform, Harvard Institute for International Development, 1996-.

Member, National Research Council Highway Cost Allocation Study Review Committee, 1995-.

Member, Defense Science Board Task Force on the Antitrust Aspects of Defense Industry Consolidation, 1993-94.

Editorial Board, Utilities Policy, 1990-

Leif Johanson Lecturer, University of Oslo, November 1988.

Member, New Jersey Governor's Task Force on Market-Based Pricing of Electricity, 1987-89.

Co-editor, Handbook of Industrial Organization, 1984-89.

Associate Editor, Journal of Industrial Economics, 1984-89.

Director, Consultants in Industry Economics, Inc., 1983-89, 1991-94.

Fellow, Econometric Society, 1981-.

Organizing Committee, Carnegie-Mellon-N.S.F. Conference on Regulation, 1985.

Board of Editors, American Economic Review, 1980-83.

Nominating Committee, American Economic Association, 1980-1981.

Research Advisory Committee, American Enterprise Institute, 1980-1986.

Editorial Board, M.I.T. Press Series on Government Regulation of Economic Activity, 1979-93.

Program Committee, 1980 World Congress of the Econometric Society.

Program Committee, Econometric Society, 1979, 1981, 1985.



Organizer, American Economic Association Meetings: 1980, 1982.

American Bar Association Section 7 Clayton Act Committee, 1981.

Principal Investigator, NSF grant SOC79-0327, 1979-80; NSF grant 285-6041, 1980-82; NSF grant SES-8038866, 1983-84, 1985-86.

Aspen Task Force on the Future of the Postal Service, 1978-80.

Organizing Committee of Sixth Annual Telecommunications Policy Research Conference, 1977-78.

Visiting Fellow, University of Warwick, July 1977.

Institute for Mathematical Studies in the Social Sciences, Stanford University, 1975.

Consulting: Bell Laboratories, 1978-79; AT&T, 1978-89, 1991-; Conrail 1978-87, 1991-97; Federal Trade Commission, 1979-82, 1994-96; Pennsylvania Bell, 1980; Simpson Thatcher Bartlett, 1980, 1993-98; American Association of Railroads, 1981, 1985; Math-tech, 1981; Union Pacific Railroad, 1981, 1995-; Family Lines Rail System, 1982; Pepper, Hamilton, and Scheetz, 1981-87, 1991-98; Siemens Corp., 1982; Board of Governors of U. S. Postal Service, 1981; OECD, 1983-85, 1991-95; Sidley & Austin, 1983-89, 1991-98; U.S. Postal Service, 1983-84; Echlin Inc., 1982-83; United Airlines, 1983, 1991-98; Consultants in Industry Economics, 1983-89, 1991-; Wiley, Malehorn & Sirota, 1983-89; City of Newark, 1984; Arnold & Porter, 1986-89, 1991-; Howrey & Simon, 1985-88, 1993-; Kodak, 1987-89; Crowell & Moring, 1988; Viacom 1989, 1991-98; Bell Atlantic, 1991-94; Intel, 1991-93; AOPL, 1993; IBM, 1993-96; Merck, 1993-1995; Harkins Cunningham, 1993-96; Boeing, 1993-98; Niagra Mohawk, 1994; PSE&G, 1994-1996; Microsoft, 1994; Coca-Cola Co., 1994-; Digital Equipment Corp. 1997-98; World Bank 1994-; Inter-American Development Bank, 1997-; Air Transport Association of America, 1998.

#### **Published Articles and Book Chapters:**

"Economic Principles to Guide Post-Privatization Governance," forthcoming in Can Privatization Deliver? Infrastructure for Latin America, R. Willig co-editor, Johns Hopkins Press, 1999.

"Access and Bundling in High-Technology Markets," (with J. A. Ordover), forthcoming in Competition, Convergence and the Microsoft Monopoly, T. Lenard editor.

"Competitive Rail Regulation Rules: Should Price Ceilings Constrain Final Products or Inputs?," (With W. J. Baumol), Journal of Transport Economics and Policy, Vol. 33, Part 1, pp. 1-11.

"Economic Effects of Antidumping Policy," Brookings Trade Forum: 1998, 19-41.

"Consumer's Surplus Without Apology," reprinted in Readings in Microeconomic Theory, M. M. La Manna (ed.), Dryden Press, 1997, pp. 201-212.

"Interview With Economist Robert D. Willig," Antitrust , Vol. 11, No. 2, Spring 1997, pp. 11-15.

"Parity Pricing and its Critics: A Necessary Condition for Efficiency in Provision of Bottleneck Services to Competitors," (with W. J. Baumol and J. A. Ordover), Yale Journal on Regulation, Vol. 14, No. 1, Winter 1997, pp. 145-164.

"Restructuring Regulation of the Rail Industry," (with Ioannis Kessides), in Private Sector, Quarterly No. 4, September 1995, pp. 5 - 8. Reprinted in Viewpoint, October, 1995, The World Bank. Reprinted in Private Sector, special edition: Infrastructure, June 1996.

"Competition and Regulation in the Railroad Industry," (with Ioannis Kessides), in Regulatory Policies and Reform: A Comparative Perspective, C. Frischtak (ed.), World Bank, 1996.

"Economic Rationales for the Scope of Privatization," (with Carl Shapiro), reprinted in The Political Economy of Privatization and Deregulation, E. E. Bailey and J. R. Pack (eds.), The International Library of Critical Writings in Economics, Edward Elgar Publishing Co., 1995, pp. 95-130.

"Weak Invisible Hand Theorems on the Sustainability of Multi-product Natural Monopoly," (with W. Baumol and E. Bailey), reprinted in The Political Economy of Privatization and Deregulation, E. E. Bailey and J. R. Pack (eds.), The International Library of Critical Writings in Economics, Edward Elgar Publishing Co., 1995, pp. 245-260.

"Economists' View: The Department of Justice Draft Guidelines for the Licensing and Acquisition of Intellectual Property," (with J. Ordover), Antitrust, V. 9, No. 2 (spring 1995), 29-36.

"Public Versus Regulated Private Enterprise," in Proceedings of the World Bank Annual Conference on Development Economics 1993, L. Summers (ed.), The World Bank, 1994.

"Economics and the 1992 Merger Guidelines: A Brief Survey," (with J. Ordover), Review of Industrial Organization, V. 8, No. 2, (1993), pp. 139-150.

"The Role of Sunk Costs in the 1992 Guidelines' Entry Analysis," Antitrust, V. 6, No. 3 (summer 1992).

"Antitrust Lessons from the Airlines Industry: The DOJ Experience," Antitrust Law Journal, V. 60, No. 2 (1992).

"William J. Baumol," (with E. E. Bailey), in New Horizons in Economic Thought: Appraisals of Leading Economists, W. J. Samuels (ed.), Edward Elgar, 1992.  
"Anti-monopoly Policies and Institutions," in The Emergence of Market Economies in Eastern Europe, Christopher Clague and Gordon Rausser (eds.), Basil Blackwell, 1992.

"Economics and the 1992 Merger Guidelines," (with Janusz Ordover), in Collaborations Among Competitors: Antitrust Policy and Economics, Eleanor Fox and James Halverson (eds.), American Bar Association, 1992.

"On the Antitrust Treatment of Production Joint Ventures," (with Carl Shapiro), reprinted in Collaborations Among Competitors: Antitrust Policy and Economics, Eleanor Fox and James Halverson (eds.), American Bar Association, 1992.

"Merger Analysis, Industrial Organization Theory, and Merger Guidelines," Brookings Papers on Economic Activity -- Microeconomics 1991, pp. 281-332.

"On the Antitrust Treatment of Production Joint Ventures," (with C. Shapiro), Journal of Economic Perspectives, Vol. 4, No. 3, Summer 1990, pp. 113-130.

"Economic Rationales for the Scope of Privatization," (with Carl Shapiro), in The Political Economy of Public Sector Reform and Privatization, E.N. Suleiman and J. Waterbury (eds.), Westview Press, Inc., 1990, pp. 55-87.

"Contestable Market Theory and Regulatory Reform," in Telecommunications Deregulation: Market Power and Cost Allocation, J.R. Allison and D.L. Thomas (eds.), Ballinger, 1990.

"Address To The Section," Antitrust Law Section Symposium, New York State Bar Association, 1990.

"Price Caps: A Rational Means to Protect Telecommunications Consumers and Competition," (with W. Baumol), Review of Business, Vol. 10, No. 4, Spring 1989, pp. 3-8.

"U.S.-Japanese VER: A Case Study from a Competition Policy Perspective," (with M. Dutz) in The Costs of Restricting Imports, The Automobile Industry. OECD, 1988.

"Contestable Markets," in The New Palgrave: A Dictionary of Economics, J. Eatwell, M. Milgate, and P. Newman (eds.), 1987.

"Do Entry Conditions Vary Across Markets: Comments," Brookings Papers on Economic Activity, 3 - 1987, pp. 872-877.

"Railroad Deregulation: Using Competition as a Guide," (with W. Baumol), Regulation, January/February 1987, Vol. 11, No. 1, pp. 28-36.

"How Arbitrary is 'Arbitrary'? - or, Toward the Deserved Demise of Full Cost Allocation," (with W. Baumol and M. Koehn), Public Utilities Fortnightly, September 1987, Vol. 120, No. 5, pp. 16-22.

"Contestability: Developments Since the Book," (with W. Baumol), Oxford Economic Papers, December 1986, pp. 9-36.

"The Changing Economic Environment in Telecommunications: Technological Change and Deregulation," in Proceedings from the Telecommunications Deregulation Forum; Karl Eller Center; 1986.

"Perspectives on Mergers and World Competition," (with J. Ordoover), in Antitrust and Regulation, R.E. Grieson (ed.), Lexington, 1986.

"On the Theory of Perfectly Contestable Markets," (with J. Panzar and W. Baumol), in New Developments in The Analysis of Market Structure, J. Stiglitz and F. Mathewson (eds.), MIT Press, 1986.

"InterLATA Capacity Growth and Market Competition," (with C. Shapiro), in Telecommunications and Equity: Policy Research Issues, J. Miller (ed.), North Holland, 1986.

"Corporate Governance and Market Structure," in Economic Policy in Theory and Practice, A. Razin and E. Sadka (eds.), Macmillan Press, 1986.

"Antitrust for High-Technology Industries: Assessing Research Joint Ventures and Mergers," (with J. Ordover), Journal of Law and Economics, Vol 28(2), May 1985, pp. 311-334.

"Non-Price Anticompetitive Behavior by Dominant Firms Toward the Producers of Complementary Products," (with J. Ordover and A. Sykes), in Antitrust and Regulation, F.M. Fisher (ed.), MIT Press, 1985.

"Telephones and Computers: The Costs of Artificial Separation," (with W. Baumol), Regulation, March/April 1985.

"Transfer Principles in Income Redistribution," (with P. Fishburn), Journal of Public Economics, 25 (1984), pp. 1-6.

"Market Structure and Government Intervention in Access Markets," in Telecommunications Access and Public Policy, A. Baughcam and G. Faulhaber (eds.), 1984.

"Pricing Issues in the Deregulation of Railroad Rates," (with W. Baumol), in Economic Analysis of Regulated Markets: European and U. S. Perspectives, J. Finsinger (ed.), 1983.

"Local Telephone Pricing in a Competitive Environment," (with J. Ordover), in Telecommunications Regulation Today and Tomorrow, E. Noam (ed.), Harcourt Brace Jovanovich, 1983.

"Economics and Postal Pricing Policy," (with B. Owen), in The Future of the Postal Service, J. Fleishman (ed.), Praeger, 1983.

"Selected Aspects of the Welfare Economics of Postal Pricing," in Telecommunications Policy Annual, Praeger, 1987.

"The Case for Freeing AT&T" (with M. Katz), Regulation, July-Aug. 1983, pp. 43-52.

"Predatory Systems Rivalry: A Reply" (with J. Ordover and A. Sykes), Columbia Law Review, Vol. 83, June 1983, pp. 1150-1166. Reprinted in Corporate Counsel's Handbook - 1984.

"Sector Differentiated Capital Taxation with Imperfect Competition and Interindustry Flows," Journal of Public Economics, Vol. 21, 1983.

"Contestable Markets: An Uprising in the Theory of Industry Structure: Reply," (with W.J. Baumol and J.C. Panzar), American Economic Review, Vol. 73, No. 3, June 1983, pp. 491-496.

"The 1982 Department of Justice Merger Guidelines: An Economic Assessment," (with J. Ordover), California Law Review, Vol. 71, No. 2, March 1983, pp. 535-574. Reprinted in Antitrust Policy in Transition: The Convergence of Law and Economics, E.M. Fox and J.T. Halverson (eds.), 1984.

"Intertemporal Failures of the Invisible Hand: Theory and Implications for International Market Dominance," (with W.J. Baumol), Indian Economic Review, Vol. XVI, Nos. 1 and 2, January-June 1981, pp. 1-12.

"Unfair International Trade Practices," (with J. Ordover and A. Sykes), Journal of International Law and Politics, Vol. 15, No. 2, winter 1983, pp. 323-337.

"Journals as Shared Goods: Reply," (with J. Ordover), American Economic Review, V. 72, No. 3, June 1982, pp. 603-607.

"Herfindahl Concentration, Rivalry, and Mergers," (with J. Ordover and A. Sykes), Harvard Law Review, V. 95, No. 8, June 1982, pp. 1857-1875.

"An Economic Definition of Predation: Pricing and Product Innovation," (with J. Ordover), Yale Law Journal, Vol. 90: 473, December 1981, pp. 1-44.

"Fixed Costs, Sunk Costs, Entry Barriers, and the Sustainability of Monopoly," (with W. Baumol), Quarterly Journal of Economics, Vol. 96, No. 3, August 1981, pp. 405-432.

"Social Welfare Dominance," American Economic Review, Vol. 71, No. 2, May 1981, pp. 200-204.

"Economies of Scope," (with J. Panzar), American Economic Review, Vol. 72, No. 2, May 1981, pp. 268-272.

"Income-Distribution Concerns in Regulatory Policymaking," (with E.E. Bailey) in Studies in Public Regulation (G. Fromm, ed.), MIT Press, Cambridge, 1981, pp. 79-118.

- "An Economic Definition of Predatory Product Innovation," (with J. Ordover), in Strategic Predation and Antitrust Analysis, S. Salop (ed.), 1981.
- "What Can Markets Control?" in Perspectives on Postal Service Issues, R. Sherman (ed.), American Enterprise Institute, 1980.
- "Pricing Decisions and the Regulatory Process," in Proceedings of the 1979 Rate Symposium on Problems of Regulated Industries, University of Missouri-Columbia Extension Publications, 1980, pp. 379-388.
- "The Theory of Network Access Pricing," in Issues in Public Utility Regulation, H.M. Trebing (ed.), MSU Public Utilities Papers, 1979.
- "Customer Equity and Local Measured Service," in Perspectives on Local Measured Service, J. Baude, et al. (ed.), 1979, pp. 71-80.
- "The Role of Information in Designing Social Policy Towards Externalities," (with J. Ordover), Journal of Public Economics, V. 12, 1979, pp. 271-299.
- "Economies of Scale and the Profitability of Marginal-Cost Pricing: Reply," (with J. Panzar), Quarterly Journal of Economics, Vol. 93, No. 4, November 1979, pp. 743-4.
- "Theoretical Determinants of the Industrial Demand for Electricity by Time of Day," (with J. Panzar) Journal of Econometrics, V. 9, 1979, pp. 193-207.
- "Industry Performance Gradient Indexes," (with R. Dansby), American Economic Review, V. 69, No. 3, June 1979, pp. 249-260.
- "The Economic Gradient Method," (with E. Bailey), American Economic Review, Vol. 69, No. 2, May 1979, pp. 96-101.
- "Multiproduct Technology and Market Structure," American Economic Review, Vol. 69, No. 2, May 1979, pp. 346-351.
- "Consumer's Surplus Without Apology: Reply," American Economic Review, Vol. 69, No. 3, June 1979, pp. 469-474.
- "Decisions with Estimation Uncertainty," (with R. Klein, D. Sibley, and L. Rafsky), Econometrica, V. 46, No. 6, November 1978, pp. 1363-1388.
- "Incremental Consumer's Surplus and Hedonic Price Adjustment," Journal of Economic Theory, V. 17, No. 2, April 1978, pp. 227-253.

"Recent Theoretical Developments in Financial Theory: Discussion," The Journal of Finance, V. 33, No. 3, June 1978, pp. 792-794.

"The Optimal Provision of Journals Qua Sometimes Shared Goods," (with J. Ordoover), American Economic Review, V. 68, No. 3, June 1978, pp. 324-338.

"On the Comparative Statics of a Competitive Industry With Infra-marginal Firms," (with J. Panzar), American Economic Review, V. 68, No. 3, June 1978, pp. 474-478.

"Pareto Superior Nonlinear Outlay Schedules," Bell Journal of Economics, Vol. 9, No. 1, Spring 1978, pp. 56-69.

"Predatoriness and Discriminatory Pricing," in The Economics of Anti-Trust: Course of Study Materials, American Law Institute-American Bar Association, 1978.

"Economies of Scale in Multi-Output Production," (with J. Panzar), Quarterly Journal of Economics, V. 91, No. 3, August 1977, pp. 481-494.

"Weak Invisible Hand Theorems on the Sustainability of Multi-product Natural Monopoly," (with W. Baumol and E. Bailey), American Economic Review, V. 67, No. 3, June 1977, pp. 350-365.

"Free Entry and the Sustainability of Natural Monopoly," (with J. Panzar), Bell Journal of Economics, Spring 1977, pp. 1-22.

"Risk Invariance and Ordinally Additive Utility Functions," Econometrica, V. 45, No. 3, April 1977, pp. 621-640.

"Ramsey-Optimal Pricing of Long Distance Telephone Services," (with E. Bailey), in Pricing in Regulated Industries, Theory and Application, J. Wenders (ed.), Mountain State Telephone and Telegraph Co., 1977, pp. 68-97.

"Network Externalities and Optimal Telecommunications Pricing: A Preliminary Sketch," (with R. Klein), in Proceedings of Fifth Annual Telecommunications Policy Research Conference, Volume II, NTIS, 1977, pp. 475-505.



"Otsenka ekonomicheskoi effektivnosti proizvodstvennoi informatsii" ["The Evaluation of the Economic Benefits of Productive Information"] in Doklady Sovetskikh i Amerikanskikh Spetsialistov Predstavlennye na Pervyi Sovetsko-Amerikanskii Simpozium po Ekonomicheskoi Effektivnosti Informat sionnogo Obsluzhivaniia [Papers of Soviet and American Specialists Presented at the First Soviet- American Symposium on Costs and Benefits of Information Services], All Soviet Scientific Technical Information Center, Moscow, 1976.

"Vindication of a 'Common Mistake' in Welfare Economics," (with J. Panzar), Journal of Political Economy, V. 84, No. 6, December 1976, pp. 1361-1364.

"Consumer's Surplus Without Apology," American Economic Review, V. 66, No. 4, September 1976, pp. 589-597.

### **Books**

Can Privatization Deliver? Infrastructure for Latin America, R. Willig co-editor, Johns Hopkins Press, forthcoming 1999.

Handbook of Industrial Organization, (edited with R. Schmalensee), North Holland Press, Volumes 1 and 2, 1989.

Contestable Markets and the Theory of Industry Structure, (with W.J. Baumol and J.C. Panzar), Harcourt Brace Jovanovich, 1982. Second Edition, 1989.

Welfare Analysis of Policies Affecting Prices and Products, Garland Press, 1980.

### **Unpublished Reports:**

"The Scope of Competition in Telecommunications" (with B. Douglas Bernheim)

"Why Do Christie and Schultz Infer Collusion From Their Data?," (with Alan Kleidon), 1995.

"Economic Foundations for Vertical Merger Guidelines," (with B. Douglas Bernheim), 1994.

"Demonopolization," (with Sally Van Siclen), OECD Vienna Seminar Paper, 1993.